

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Douglas J. DELLINGER

Divisional of Serial No.: 09/691,824

Group Art Unit: Unassigned

Filing Date: Concurrently herewith

Examiner: Unassigned

Title: PHOSPHINOAMIDITE CARBOXYLATES AND ANALOGS THEREOF IN THE
SYNTHESIS OF OLIGONUCLEOTIDES HAVING REDUCED INTERNUCLEOTIDE
CHARGE

INFORMATION DISCLOSURE STATEMENT

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Information Disclosure Statement submitted for the Examiner's consideration. Applicants respectfully request that the Examiner review and make of record the references identified below.

The references identified below were disclosed and/or cited in parent application Serial No. 09/691,824, filed October 17, 2000, and, as such, copies thereof are not included pursuant to the provisions of 37 CFR § 1.98(d).

A PTO-1449 form listing the references accompanies this paper. Applicants would appreciate the Examiner's initialing and returning the form to indicate that the references have been reviewed and made of record. The references are as follows:

U.S. PATENT DOCUMENTS		
Document No.	Issue Date / Publication Date	Patentee / Applicant
4,056,673	11/1/77	Heimer et al.
4,415,732	11/15/83	Caruthers et al.
4,725,677	2/16/88	Köster et al.
5,763,208	6/9/98	Bischofberger et al.
6,069,243	5/30/00	Scozzari et al.

FOREIGN PATENT DOCUMENTS		
Document No.	Publication Date	Country
WO 93/10140	5/27/93	PCT
WO 02/32912	4/25/02	PCT

OTHER DOCUMENTS
BECKER et al. (1977), "Phosphonoacetic Acid-Resistant Mutants of Herpes Simplex Virus: Effect of Phosphonoacetic Acid on Virus Replication and In Vitro Deoxyribonucleic Acid Synthesis in Isolated Nuclei," <i>Antimicrobial Agents and Chemotherapy</i> <u>11</u> (5):919-922.
FREIER et al. (1997), "The Ups and Downs of Nucleic Acid Duplex Stability: Structure-Stability Studies on Chemically-Modified DNA:RNA Duplexes," <i>Nucleic Acids Research</i> <u>25</u> (22):4429-4443.
GRIENGL et al. (1988), "Phosphonoformate and Phosphonoacetate Derivatives of 5-Substituted 2'-Deoxyuridines: Synthesis and Antiviral Activity," <i>J. Med. Chem.</i> <u>31</u> (9):1831-1839.
GUT et al. (1995), "A Procedure for Selective DNA Alkylation and Detection by Mass Spectrometry," <i>Nucleic Acids Research</i> <u>23</u> (8):1367-1373.
HAGEN et al. (1989), "General Synthesis of 2'(3')-O-Aminoacyl Oligoribonucleotides. The Protection of the Guanine Moiety," <i>J. Org. Chem.</i> <u>54</u> (13):3189-3195.
IYER et al. (1999), "Modified Oligonucleotides – Synthesis, Properties and Applications," <i>Molecular Therapeutics</i> <u>1</u> (3):344-358.
LAMBERT et al. (1989), "Synthesis and Antiviral Activity of Phosphonoacetic and Phosphonoformic Acid Esters of 5-Bromo-2'-Deoxyuridine and Related Pyrimidine Nucleosides and Acyclonucleosides," <i>J. Med. Chem.</i> <u>32</u> (2):367-374.
MATROSOV et al. (1972), "Infrared Spectra and the Association of Phosphinylacetic Acids," <i>Zhurnal Obshchei Khimii</i> , <u>42</u> (8):1695-1700.
NOVIKOVA et al. (1976), "New Method for the Synthesis of α -Phosphorus ^{III} -Substituted Carboxylic Esters," <i>Zhurnal Obshchei Khimii</i> <u>46</u> (3):575-578.
NOVIKOVA et al. (1976), "Reactivity of Diphosphorus ^{III} -Substituted Acetic Esters," <i>Zhurnal Obshchei Khimii</i> <u>46</u> (10):2213-2217.
PODLAHOVÁ (1978), "Preparation and Characterization of a New Ligand – Phenylphosphinediacetic Acid," <i>Collection Czechoslov. Chem. Commun.</i> <u>43</u> :57-72.
RUDOLPH et al. (1996), "Phosphonoacetate Derivatives of Oligodeoxyribonucleotides," <i>Nucleosides & Nucleotides</i> <u>15</u> (11 & 12):1725-1739.
SCALF et al. (2000), "Charge Reduction Electrospray Mass Spectrometry," <i>Anal. Chem.</i> <u>72</u> (1):52-60.
SCHULTZ et al. (1996), "Oligo-2'-Fluoro-2'-Deoxynucleotide N3'→P5' Phosphoramidates: Synthesis and Properties," <i>Nucleic Acids Research</i> <u>24</u> (15):2966-2973.
STEPANOV et al. (1979), "Synthesis of Phosphorus(III) Compounds Containing an (Alkoxy carbonyl)Methyl Group," <i>Zhurnal Obshchei Khimii</i> <u>49</u> (10):2389.
VAN DOORN et al. (1989), "Synthesis of Some Functionalized Phosphinocarboxylic Acids," <i>Phosphorus, Sulfur, and Silicon</i> <u>42</u> :211-222.
WILK et al. (2000), "Deoxyribonucleoside Cyclic N-Acylphosphoramidites as a New Class of Monomers for the Stereocontrolled Synthesis of Oligothymidylyl- and Oligodeoxycytidylyl-Phosphorothioates," <i>J. Am. Chem. Soc.</i> <u>122</u> (10):2149-2156.

This Information Disclosure Statement is not intended as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that any of the above references constitutes prior art to the present application within the meaning of 35 USC § 102.

As this Information Disclosure Statement is being filed concurrently with the application, no fee is required.

Respectfully submitted,

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Shelley P. Eberle
Registration No. 31,411

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Complete if Known	
				Applicati n Number	Divisional of 09/691,824
				Filing Date	Concurrently herewith
				First Named Inventor	Douglas A. DELLINGER
				Art Unit	Unassigned
				Examiner Name	Unassigned
Sheet	1	of	2	Attorney Docket Number	2750-0001.10

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OTHER DOCUMENTS — NONPATENT LITERATURE DOCUMENTS							
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	AH	BECKER et al. (1977), "Phosphonoacetic Acid-Resistant Mutants of Herpes Simplex Virus: Effect of Phosphonoacetic Acid on Virus Replication and In Vitro Deoxyribonucleic Acid Synthesis in Isolated Nuclei," <i>Antimicrobial Agents and Chemotherapy</i> 11(5):919-922.					
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Examiner Signature		Date Considered	
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